GEOTECHNICAL ASPECTS OF DESIGN AND CONSTRUCTION OF DIAPHRAGM WALL FOR DEEP EXCAVATION

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ABSTRACT

For this project, the main objectives are to find out the geotechnical aspects involved in the design and construction of the diaphragm wall for deep excavation. Before the construction of the diaphragm wall, the engineers have to conduct soil exploration to get the soil properties and to determine the soil profile as well as the location of the groundwater table.

Diaphragm walls are used to support horizontal loads and vertical loads. It is made watertight to encapsulate pollution in the ground. A diaphragm wall is build to prove a subterranean barrier against the transmission of dynamic vibration in the ground. The materials used in construction f a diaphragm wall are the bentonite slurry, cement, clay powder, stone powder, sand, gravel, and water.

There are two types of excavation that can be done to excavate the trench. They are the grab machines and the cutter machines. During excavation bentonite slurry can be determined to give a minimum factor of safety of 1.5.

The construction methods of the diaphragm wall are either the single phase construction or the two phase construction. Site constraints, economy of construction aer important considerations in the design and selection of diaphragm wall for deep excavation besides considering the soil profile. Rankine's Earth Pressure Theory is generally used in designing the stability of the diaphragm wall.